FROM WorldCom Technology Law Washington DC

(FRI) 4. 30' 04 11:21/ST. 11:19/NO. 4261173153 P 10

Docket No.: Ric9

CENTRAL FAX CENTER

APR 3 0 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):

William C. Hardy

Confirmation No.:

6275

Serial No.:

Filed:

09/866,770

May 30, 2001

Art Unit:

2665

Examiner:

T. Tran

Title: Determining the Effects of New Types of Impairments on Perceived Quality of a Voice Signals

SUBMISSION OF FORMAL DRAWINGS

BOX ISSUE FEE Commissioner for Patents PO Box 1450 Alexandria, VA 22313-1450

Dear Sir:

Trunsmitted herewith are 10 sheets (figures 1 - 10) of formal drawings to be substituted for the corresponding drawing sheets presently on file in the above-identified application.

Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees or publication fees, to Deposit Account No. 13-2491 and please credit any excess fees to such deposit account.

Respectfully submitted,

WorldCom, Inc. 1133 19th Street, NW Washington, DC 20036 Phone: 202 736-6008

Fax: 202-736-6382

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FROM WorldCom Technology Law Washington DC (FRI) 4. 30'04 11:22/ST. 1

Appln No.: 09/866,770

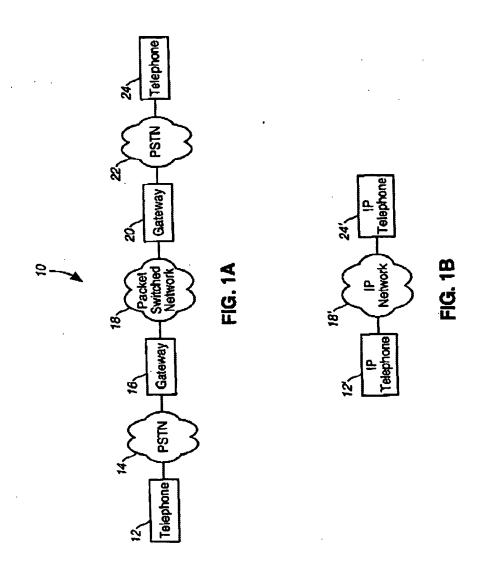
Title: Determining the Effects of new Types of Impairments on Perceived...

Inventors: Hardy

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(FRI) 4.30'04 11:22/ST.11:19/NO.4261173153 P 11

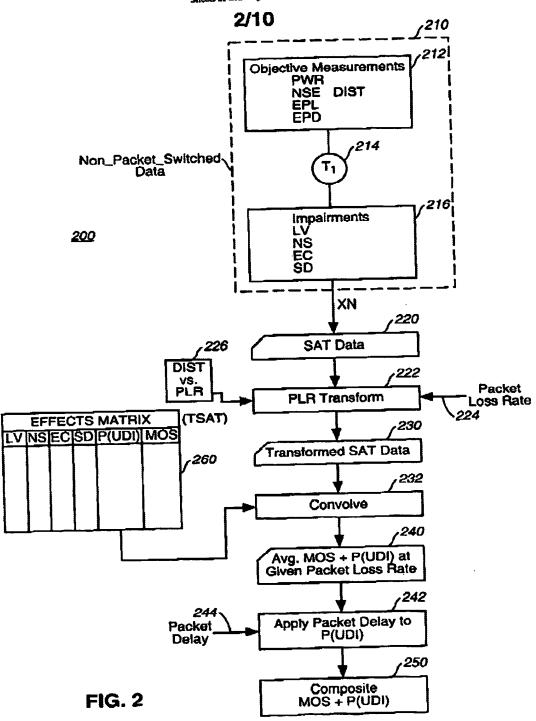
Sheets of Drawings: 1 of 10



Apple No.: 09/866,770
Title: Determining the Effects of new Types of Impairments on Perceived...

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Sheets of Drawings: 2 of 10



FROM WorldCom Technology Law Washington DC (FRI) 4. 30'04 11:22/ST. 11:

Apply No.: 09/866,770
Title: Determining the Effects of new Types of Impairments on Perceived...
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(FRI) 4. 30' 04 11:22/ST. 11:19/NO. 4261173153 P 13

Sheets of Drawings: 3 of 10

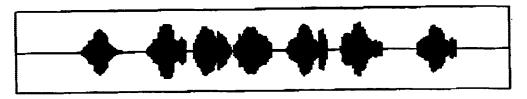


FIG. 3A



FIG. 3B



FIG. 3C

FROM WorldCom Technology Law Washington DC (FRI) 4. 30' 04 11:22/ST. 11:19/NO. 4261173153 P 14

Appla No.: 007856,770
Title: Determining the Efficies of new Types of impairments and Apple No.: 6275
Confirmation No.: 6275

Sheets of Drawings: 4 of 10 4/10 Telephone PSTN PSTN

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(FRI) 4. 30' 04 11:22/ST. 11:19/NO. 4261173153 P 15

Docket No.: RIC98014P2
Appla No.: 09/866.770
Thie: Determining the Effects of new Types of Impairments on Perceived...
Inventors: Hardy
Confirmation No.: 6275

Sheets of Drawings: 5 of 19

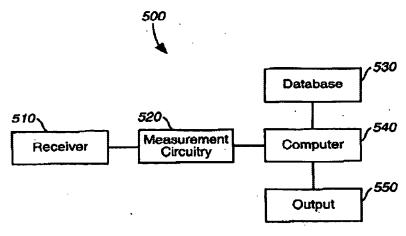


FIG. 5

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Confirmation No.: 6275

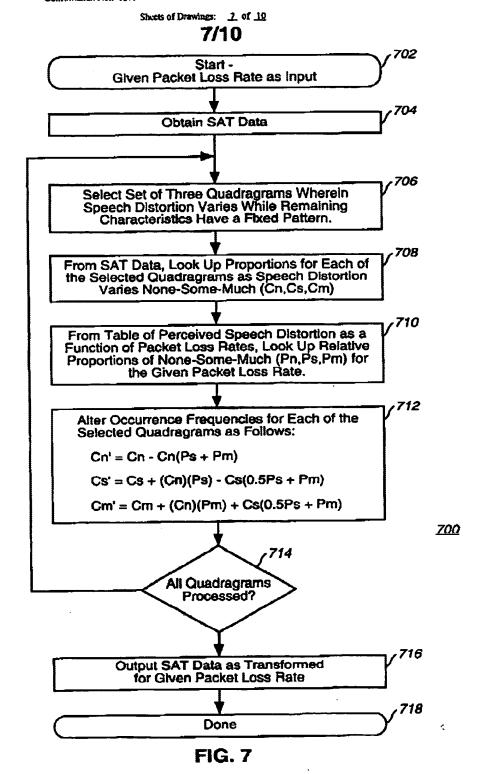
Sheets of Drawings: 6 of 10 602 6/10 Start -Given Input of Packet Loss Rate and Packet **Delay for Second Communications Service** 604 Obtain SAT Data for First Communications Service ,606 Apply TSAT Model to Calculate MOS1 and P(UDI)1 for First Communications Service - Calculate Required MOS and P(UDI) for Second Communications Service: MOSREQ = MOS1 - 0.2 600 P(UDI)REQ = 0.06608 Transform SAT Data to Reflect Influence of Packet Loss Rate on Perceived Distortion. 610 Apply TSAT Model to Transformed SAT Data to Derive Worst Case MOS2 and P(UDI)2 for Second Communications Service. 612 Determine Effect of Packet Delay on P(UDI) -Subtract from P(UDI)REQ. ,614 Calculate Maximum Proportion of MOS2: MOS1 to Result in Average MOS >= MOSREQ. ,616 Calculate Maximum Proportion of P(UDI)2 : P(UDI)1 Resulting in Average P(UDI) <= P(UDI)REQ. ,618 Select Lesser of: Maximum Proportion Based on MOS
 Maximum Proportion Based on P(UDI) ,620 Output Selected Proportion as Maximum Allowed for Second Communication Service to be Perceived with Same Quality as First Communication Service 622 Done Processing One Packet Loss Rate FIG. 6 and Packet Delay Combination

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Inventors: Flardy

Confirmation No.: 6275



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Inventors: Hardy
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Sheets of Drawings: _8_ of _10

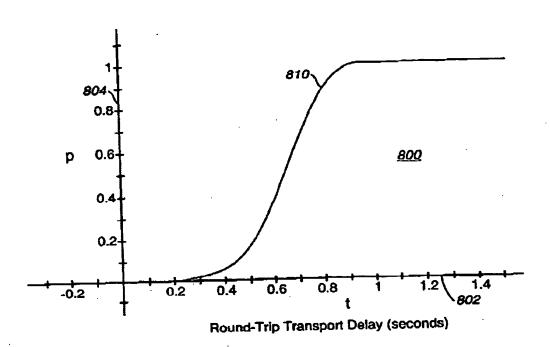


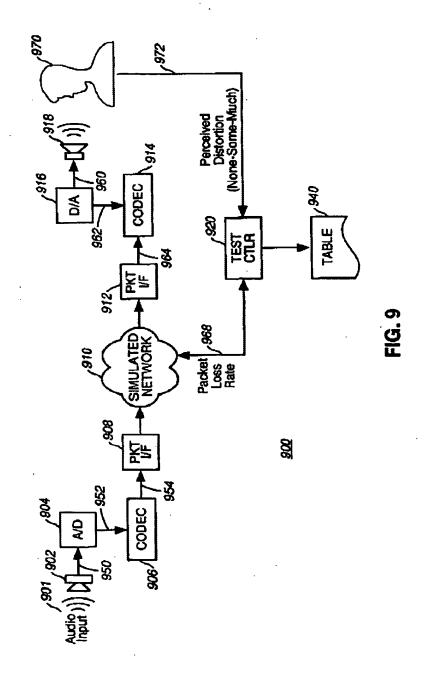
FIG. 8

FROM WorldCom Technology Law Washington DC (FRI) 4. 30' 04 11:23/ST. 11:

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PAGE 1920 * RCVD AT 4030/2004 12:21:11 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:3729306 * CSID:2027385382 * DURATION (man-ss):04-14



FROM WorldCom Technology Law Washington DC (THU) 7. 29'04 9:55/ST. 9:47/NO. 4261173590 P 24 Appln 19/866.770

Title: Determining the Effects of new Types of impairments on Period appln: 09/866,770 Inventors: Hardy Confirmation No.: 6275 Sheets of Drawings: 10 of 10 10/10 1000 1002 Start -Given CODEC Type and Transmission Protocol, Determine Distortion as a Function of Packet Loss Rate. 1004 Establish a Voice Communication Channel Utilizing the Given CODEC and Transmission Protocol. Record Objective Measurements on the Channel While Recording Packet Loss Rate (Ensure That Adequate Number of Measurements are Made While Packet Loss Rate is Negligible). 1006 Divide Measurements Into Groups by Range of Packet Loss Rates Experienced During the Measurements. 1008 For Each Group, Compute Distribution of Impairment Ratings ('SAT' Data) Using Transform 214. 1010 Using an Assumed Model for Distortion as a Function of Packet Loss Rate, Transform SAT Data for Each Group as Described in Step 222 of Figure 2. 1012 For Each Group, Convolve the Transformed SAT Data with Effects Matrix 260 to Derive a Mean Opinion Score(MOS). 1014 Determine Correlation Between Observed Packet Loss Rate for Each Group and the Corresponding MOS Values. 1018 1016 Adjust Assumed Model of Distortion as a Nο Is Correlation Function of Adequate Packet Loss Rate. Yes 1020 In the Process of Figure 2, Adopt the Assumed Model as Function 226 for Subsequent Use in Characterizing Communications Using the Given CODEC Type and Transmission Protocol. 1022 Done

FIG. 10